

What is claimed is:

1. An inflatable sealing assembly for a flow carrier, comprising:

a housing capable of being integrated with a flow carrier to permit an unobstructed flow of a media through an inside of said flow carrier, said housing including an outer wall, an inner wall, and an interior between said outer and inner walls, wherein when said housing is integrated with said flow carrier said inner wall of said housing defines part of said inside of said flow carrier;

a compartment in said interior of said housing, said compartment having an opening that provides access to said inside of said flow carrier;

an inflatable sealing means having a non-deployed position and a deployed position, wherein in said non-deployed position said inflatable sealing means is stored substantially within said compartment;

an inflating means capable of deploying said inflatable sealing means from said non-deployed position to said deployed position, said inflating means positioned in said interior of said housing and operatively connected to said inflatable sealing means; wherein when said inflatable sealing means is in said deployed position said inflatable sealing means is inflated and seals off said inside of said flow carrier; and

a sensor means operatively connected to said inflating means, said sensor means capable of detecting a physical condition affecting said flow carrier and of activating said inflating means to inflate said inflatable sealing means upon detection of said physical condition.

2. The inflatable sealing assembly according to claim 1, wherein said sensor means is positioned at least in part within said interior of said housing.

3. The inflatable sealing assembly according to claim 2, wherein said sensor means automatically activates said inflating means upon detection of said physical condition.

4. The inflatable sealing assembly according to claim 1, wherein said flow carrier has an external surface and wherein said sensor means is capable of detecting a physical condition affecting said external surface of said flow carrier.

5. The inflatable sealing assembly according to claim 1, wherein said sensor means is capable of detecting a physical condition in said inside of said flow carrier.

6. The inflatable sealing assembly according to claim 4, wherein said sensor means is also capable of detecting a physical condition in said inside of said flow carrier.

7. The inflatable sealing assembly according to claim 3, wherein said physical condition is selected from the group consisting of pressure, velocity, temperature, vibration, noise, density, odor, color, chemical composition, and any combination thereof.

8. The inflatable sealing assembly according to claim 1, wherein said inflating means comprises a means for inflating and deploying said inflatable sealing means.

9. The inflatable sealing assembly according to claim 1, wherein said housing has a top section, a central section, and a bottom section, said central section having a width which is greater than a width of said top section and a width of said bottom section of said housing so that said inner wall is tapered from said central section to each of said top and bottom sections.

10. The inflatable sealing assembly according to claim 9, wherein at least a portion of said inner wall at said central section of said housing comprises a protective plate.

11. The inflatable sealing assembly according to claim 9, wherein said compartment is positioned in said bottom section of said housing.

12. The inflatable sealing assembly according to claim 1, wherein said inflatable sealing means comprises an air bag.

13. The inflatable sealing assembly according to claim 1, wherein when said inflatable sealing means is in said deployed position, said inflatable sealing means is capable of being disassociated from said housing and of moving in said inside of said flow carrier to an area in said flow carrier where said inflatable sealing means seals said inside of said flow carrier at said area.

14. An inflatable sealing assembly for a tubular flow bore, comprising:

a cylindrical housing capable of being integrated with a tubular to permit an unobstructed flow of a fluid through a flow bore in said tubular, said cylindrical housing including a

top section, a central section, and a bottom section interconnected by an outer wall, an inner wall, and an interior, wherein when said cylindrical housing is integrated with said tubular said inner wall of said cylindrical housing defines part of said flow bore in said tubular;

a compartment in said interior of said housing extending substantially around a circumference of said cylindrical housing, said compartment having an opening that provides access to said flow bore of said tubular;

an inflatable sealing ring having a non-deployed position and a deployed position, wherein in said non-deployed position said inflatable sealing ring is stored substantially within said compartment;

an inflating means capable of deploying said inflatable sealing ring from said non-deployed position to said deployed position, said inflating means positioned in said interior of said cylindrical housing and operatively connected to said inflatable sealing ring; wherein when said inflatable sealing ring is in said deployed position said inflatable sealing ring is inflated and sealingly compresses against an outer surface of a longitudinally extending object positioned within said flow bore thereby sealing said flow bore in said tubular; and

a sensor means operatively connected to said inflating means, said sensor means capable of detecting a change in a physical condition affecting said tubular and of activating said inflating means to inflate said inflatable sealing ring upon detection of said change in said physical condition.

15. The inflatable sealing assembly according to claim 14, wherein said sensor means is positioned at least in part in said interior of said cylindrical housing.

16. The inflatable sealing assembly according to claim 15, wherein said sensor means automatically activates said inflating means upon detection of said change in said physical condition.

17. The inflatable sealing assembly according to claim 14, wherein said tubular has an external surface and wherein said sensor means is capable of detecting a change in a physical condition affecting said external surface of said tubular.

18. The inflatable sealing assembly according to claim 14, wherein said sensor means is capable of detecting a change in a physical condition in said flow bore of said tubular.

19. The inflatable sealing assembly according to claim 17, wherein said sensor means is also capable of detecting a change in a physical condition in said flow bore of said tubular.

20. The inflatable sealing assembly according to claim 16, wherein said physical condition is selected from the group consisting of pressure, velocity, temperature, vibration, noise, density, odor, color, chemical composition, and any combination thereof.

21. The inflatable sealing assembly according to claim 14, wherein said central section of said cylindrical housing has a width which is greater than a width of said top section and a width of said bottom section of said cylindrical housing so that said inner wall is tapered from said central section to each of said top and bottom sections.

22. The inflatable sealing assembly according to claim 21, wherein at least a portion of said inner wall at said central section of said cylindrical housing comprises a protective plate.

23. The inflatable sealing assembly according to claim 14, wherein said compartment is positioned in said bottom section of said cylindrical housing.

24. The inflatable sealing assembly according to claim 23, wherein said compartment storing said inflatable sealing ring is positioned in said bottom section of said cylindrical housing.

25. The inflatable sealing assembly according to claim 14, wherein said inflating means comprises a means for inflating and deploying said inflatable sealing ring.

26. The inflatable sealing assembly according to claim 14, wherein said inflatable sealing ring comprises a donut-shaped air bag.

27. The inflatable sealing assembly according to claim 14, wherein said tubular comprises at least a first tubular section and a second tubular section, said first and second tubular sections each having a top end and a bottom end and wherein said top section of said cylindrical housing is capable of being threadedly connected to said bottom end of said first tubular section and said bottom section of said cylindrical housing is capable of being threadedly connected to said top end of said



second tubular section.

28. The inflatable sealing assembly according to claim 14, wherein said inner wall of said cylindrical housing covers said opening in said compartment when said inflatable sealing ring is in said non-deployed position.

29. The inflatable sealing assembly according to claim 28, wherein a section of said inner wall is capable of moving away from said opening in said compartment to permit deployment of said inflatable sealing ring.

30. The inflatable sealing assembly according to claim 28, wherein said inner wall comprises a first section and a second section, said first and second sections each having ends which are capable of being detachably connected together, wherein deployment of said inflatable sealing ring causes said ends of said first and second sections to detach.

31. The inflatable sealing assembly according to claim 14, further comprising a slidable wedge-shaped member positioned on said inner wall of said cylindrical housing and having a first end and a second end, said second end of said slidable wedge-shaped member covers said opening in said compartment when said

inflatable sealing ring is in said non-deployed position.

32. The inflatable sealing assembly according to claim 31, wherein when said inflatable sealing ring is in said deployed position, said second end of said slidable wedge-shaped member is positioned away from said opening in said compartment with said first end of said slidable wedge-shaped member being wedged against said outer surface of said object.

33. A method of sealing off an inside of a flow carrier, comprising the steps of:

(a) providing an inflatable sealing assembly;

said inflatable sealing assembly comprising a housing capable of being integrated with said flow carrier to permit an unobstructed flow of a media through said inside of said flow carrier, said housing including an outer wall, an inner wall, and an interior between said outer and inner walls, wherein when said housing is integrated with said flow carrier said inner wall of said housing defines part of said inside of said flow carrier;

a compartment in said interior of said housing, said compartment having an opening that provides access to said inside of said flow carrier;

an inflatable sealing means having a non-deployed position and a deployed position, wherein in said non-deployed position said inflatable sealing means is stored substantially within said compartment;

an inflating means capable of deploying said inflatable sealing means from said non-deployed position to said deployed position, said inflating means positioned in said interior of said housing and operatively connected to said inflatable sealing means; wherein when said inflatable sealing means is in said deployed position said inflatable sealing means is inflated and seals off said inside of said flow carrier; and

a sensor means operatively connected to said inflating means, said sensor means capable of detecting a physical condition affecting said flow carrier and of activating said inflating means to inflate said inflatable sealing means upon detection of said physical condition;

(b) integrating said inflatable sealing assembly with said flow carrier;

(c) allowing said sensor means to detect a physical condition affecting said flow carrier.

34. The method of sealing off an inside of a flow carrier according to claim 33, further comprising the step of:

(d) causing said sensor means to activate said inflating means upon detection of said physical condition, wherein said inflating means inflates and deploys said inflatable sealing means from said non-deployed position to said deployed position to seal off said inside of said flow carrier.

35. The method of sealing off an inside of a flow carrier according to claim 34, further comprising the step of:

(e) causing said inflated and deployed inflatable sealing means to deflate.

36. The method of sealing off an inside of a flow carrier according to claim 33, wherein said sensor means detects a physical condition affecting an external surface of said flow carrier.

37. The method of sealing off an inside of a flow carrier according to claim 33, wherein said sensor means detects a physical condition in said inside of said flow carrier.

38. The method of sealing off an inside of a flow carrier according to claim 36, wherein said sensor means also detects a physical condition in said inside of said flow carrier.

39. The method of sealing off an inside of a flow carrier according to claim 34, wherein said inflatable sealing means is disassociated from said housing and moves in said inside of said flow carrier to an area in said flow carrier where said inflatable sealing means seals said inside of said flow carrier at said area.

40. The method of sealing off an inside of a flow carrier according to claim 33, further comprising the steps of:

(a1) providing at least a second inflatable sealing assembly;

said second inflatable sealing assembly comprising a housing capable of being integrated with said flow carrier to permit an unobstructed flow of a media through said inside of said flow carrier, said housing including an outer wall, an inner wall, and an interior between said outer and inner walls, wherein when said housing is integrated with said flow carrier said inner wall of said housing defines part of said inside of said flow carrier;

a compartment in said interior of said housing, said compartment having an opening that provides access to said inside of said flow carrier;

an inflatable sealing means having a non-deployed position and a deployed position, wherein in said non-deployed position said inflatable sealing means is stored substantially within said compartment;

an inflating means capable of deploying said inflatable sealing means from said non-deployed position to said deployed position, said inflating means positioned in said interior of said housing and operatively connected to said inflatable sealing means; wherein when said inflatable sealing means is in said deployed position said inflatable sealing means is inflated and seals off said inside of said flow carrier; and

a sensor means operatively connected to said inflating means, said sensor means capable of detecting a physical condition affecting said flow carrier and of activating said inflating means to inflate said inflatable sealing means upon detection of said physical condition;

(b2) integrating said second inflatable sealing assembly with said flow carrier;

(c2) allowing said sensor means in said second inflatable sealing assembly to detect a physical condition affecting said flow carrier.

41. The method of sealing off an inside of a flow carrier according to claim 40, further comprising the step of:

(d1) causing said sensor means in said second inflatable sealing assembly to activate said inflating means in said second inflatable sealing assembly upon detection of said physical condition, wherein said inflating means in said second inflatable sealing assembly inflates and deploys said inflatable sealing means in said second inflatable sealing assembly from said non-deployed position to said deployed position to seal off said inside of said flow carrier.

42. The method of sealing off an inside of a flow carrier according to claim 41, further comprising the step of:

(e1) causing said inflated and deployed inflatable sealing means in said second inflatable sealing assembly to deflate.

43. A method of sealing a flow bore in a tubular wherein said tubular comprises at least a first tubular section and a second tubular section, said first and second tubular sections each having a top end and a bottom end, comprising the steps of:

(a) providing an inflatable sealing assembly;  
said inflatable sealing assembly comprising a housing capable of being integrated with said tubular to permit an unobstructed flow of a fluid through said flow bore in said

tubular, said housing including a top section, a central section, and a bottom section interconnected by an outer wall, an inner wall, and an interior;

a compartment in said interior of said housing, said compartment having an opening that provides access to said flow bore in said tubular;

an inflatable sealing means having a non-deployed position and a deployed position, wherein in said non-deployed position said inflatable sealing means is stored substantially within said compartment;

an inflating means capable of deploying said inflatable sealing means from said non-deployed position to said deployed position, said inflating means positioned in said interior of said housing and operatively connected to said inflatable sealing means; wherein when said inflatable sealing means is in said deployed position said inflatable sealing means is inflated and seals said flow bore in said tubular; and

a sensor means operatively connected to said inflating means, said sensor means capable of detecting a change in a physical condition affecting said tubular and of activating said inflating means to inflate said inflatable sealing means upon detection of said change in said physical condition;

(b) connecting said top section of said housing to said bottom end of said first tubular section of said tubular



and connecting said bottom section of said housing to said top end of said second tubular section of said tubular so that said inner wall of said housing defines part of said flow bore in said tubular;

(c) allowing said sensor means to detect said change in said physical condition affecting said tubular.

44. The method of sealing a flow bore in a tubular according to claim 43, wherein said inflatable sealing assembly is integrated with said tubular by attaching said inflatable sealing assembly to an inside surface of said tubular.

45. The method of sealing a flow bore in a tubular according to claim 44, wherein said inflatable sealing assembly is attached to said inside surface of said tubular by fixation means.

46. The method of sealing a flow bore in a tubular according to claim 43, further comprising the step of:

(d) causing said sensor means to activate said inflating means upon detection of said change in said physical condition, wherein said inflating means inflates and deploys said inflatable sealing means from said non-deployed position to said deployed position to seal said flow bore in said tubular.

47. The method of sealing a flow bore in a tubular according to claim 46, wherein said sensor means automatically activates said inflating means upon detection of said change in said physical condition.

48. The method of sealing a flow bore in a tubular according to claim 47, wherein said physical condition is selected from the group consisting of pressure, velocity, temperature, vibration, noise, density, odor, color, chemical composition, and any combination thereof.

49. The method of sealing a flow bore in a tubular according to claim 43, wherein said inflating means comprises a means for inflating and deploying said inflatable sealing means.

50. The method of sealing a flow bore in a tubular according to claim 43, wherein said inflatable sealing means is an air bag.

51. The method of sealing a flow bore in a tubular according to claim 46, wherein said activation of said inflating means also causes activation of at least one mechanical moving means.

52. A method of sealing a flow bore in a tubular wherein said tubular comprises at least a first tubular section and a second tubular section, said first and second tubular sections each having a top end and a bottom end and wherein a longitudinally extending object is positioned in said flow bore of said tubular, comprising the steps of:

(a) providing an inflatable sealing assembly;

said inflatable sealing assembly comprising a cylindrical housing capable of being integrated with said tubular to permit an unobstructed flow of a fluid through said flow bore in said tubular, said cylindrical housing including a top section, a central section, and a bottom section interconnected by an outer wall, an inner wall, and an interior;

a compartment in said interior of said cylindrical housing extending substantially around a circumference of said cylindrical housing, said compartment having an opening that provides access to said flow bore in said tubular;

an inflatable sealing ring having a non-deployed position and a deployed position, wherein in said non-deployed position said inflatable sealing ring is stored substantially within said compartment;

an inflating means capable of deploying said inflatable sealing ring from said non-deployed position to said

deployed position, said inflating means positioned in said interior of said cylindrical housing and operatively connected to said inflatable sealing ring; wherein when said inflatable sealing ring is in said deployed position said inflatable sealing ring is inflated and sealingly compresses against an outer surface of said longitudinally extending object positioned within said flow bore thereby sealing said flow bore in said tubular; and

a sensor means operatively connected to said inflating means, said sensor means capable of detecting a change in a physical condition affecting said tubular and of activating said inflating means to inflate said inflatable sealing ring upon detection of said change in said physical condition;

(b) connecting said top section of said cylindrical housing to said bottom end of said first tubular section of said tubular and connecting said bottom section of said cylindrical housing to said top end of said second tubular section of said tubular so that said inner wall of said cylindrical housing defines part of said flow bore in said tubular;

(c) allowing said sensor means to detect said change in said physical condition affecting said tublar.

53. The method of sealing a flow bore in a tubular according to claim 52, further comprising the step of:

(d) causing said sensor means to activate said inflating means upon detection of said change in said physical condition, wherein said inflating means inflates and deploys said inflatable sealing ring from said non-deployed position to said deployed position to seal said flow bore in said tubular.

54. The method of sealing a flow bore in a tubular according to claim 53, wherein said sensor means automatically activates said inflating means upon detection of said change in said physical condition.

55. The method of sealing a flow bore in a tubular according to claim 54, wherein said physical condition is selected from the group consisting of pressure, velocity, temperature, vibration, noise, density, odor, color, chemical composition, and any combination thereof.

56. The method of sealing a flow bore in a tubular according to claim 52, wherein said inflating means comprises a means for inflating and deploying said inflatable sealing ring.

57. The method of sealing a flow bore in a tubular according to claim 52, wherein said inflatable sealing ring is a donut-shaped air bag.